

Figure 1

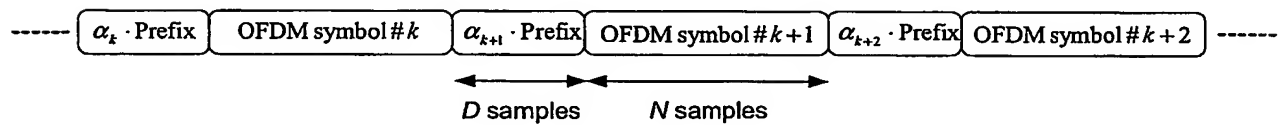


Figure 2

$$\begin{matrix} & & h_{D-1} & h_1 \\ \begin{matrix} \square & \square & \square & \square \\ \square & \square & \square & \square \\ \square & \square & \square & \square \\ \square & \square & \square & \square \\ \square & \square & \square & \square \end{matrix} & \begin{matrix} \nearrow \\ \nearrow \\ \nearrow \\ \nearrow \\ \nearrow \end{matrix} & \begin{matrix} H_1 \end{matrix} \end{matrix}$$

$$= [H_{IBI}] = \begin{pmatrix} 0 & \rightarrow & 0 & h_{D-1} & h_{D-2} & \rightarrow & h_1 \\ \downarrow & \searrow & \searrow & \searrow & h_{D-1} & \searrow & h_2 \\ \downarrow & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ \downarrow & \searrow & \searrow & \searrow & \searrow & \searrow & h_{D-1} \\ \downarrow & \searrow & \searrow & \searrow & \searrow & \searrow & 0 \\ \downarrow & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ 0 & \searrow & \searrow & \searrow & \searrow & \searrow & 0 \end{pmatrix}$$

Figure 3

$$= [H_{ISL}] = \begin{pmatrix} h_0 & 0 & \rightarrow & \rightarrow & \rightarrow & \rightarrow & 0 \\ h_1 & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ \downarrow & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ h_{D-2} & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ h_{D-1} & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ 0 & \searrow & \searrow & \searrow & \searrow & \searrow & 0 \\ 0 & \searrow & \searrow & h_{D-1} & h_{D-2} & \rightarrow & h_0 \end{pmatrix}$$

Figure 4

$$= [H_{IBL}] + [H_{ISL}] = \begin{pmatrix} h_0 & 0 & \rightarrow & h_{D-1} & h_{D-2} & \rightarrow & h_1 \\ h_1 & \searrow & \searrow & \searrow & h_{D-1} & \searrow & h_2 \\ \downarrow & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ h_{D-2} & \searrow & \searrow & \searrow & \searrow & \searrow & h_{D-1} \\ h_{D-1} & \searrow & \searrow & \searrow & \searrow & \searrow & 0 \\ 0 & \searrow & \searrow & \searrow & \searrow & \searrow & \downarrow \\ 0 & \searrow & \searrow & h_{D-1} & h_{D-2} & \rightarrow & h_0 \end{pmatrix}$$

Figure 5

$$[H] = \begin{pmatrix} h_0 & \rightarrow & h_2 & h_1 \\ h_1 & \searrow & h_3 & h_2 \\ \downarrow & \searrow & \searrow & \downarrow \\ h_{D-1} & \rightarrow & h_1 & h_0 \end{pmatrix}$$

Figure 6

$$\boxed{H_1} = \begin{pmatrix} 0 & h_{D-1} & \rightarrow & h_2 & h_1 \\ 0 & \searrow & \searrow & h_3 & h_2 \\ \downarrow & \searrow & \searrow & \searrow & \downarrow \\ \downarrow & \searrow & \searrow & \searrow & h_{D-1} \\ 0 & \searrow & \searrow & 0 & 0 \end{pmatrix}$$

Figure 7

$$\boxed{H_0} = \begin{pmatrix} h_0 & 0 & \rightarrow & \rightarrow & 0 \\ h_1 & h_0 & 0 & \searrow & \downarrow \\ \downarrow & \searrow & \searrow & \searrow & \downarrow \\ \downarrow & \searrow & \searrow & \searrow & 0 \\ h_{D-1} & h_{D-2} & \rightarrow & \rightarrow & h_0 \end{pmatrix}$$

Figure 8

$$\begin{bmatrix} r_0(k) \\ r_1(k) \\ r_2(k) \\ r_3(k) \\ r_4(k) \end{bmatrix} = \begin{array}{c} \begin{array}{|c|c|c|c|c|} \hline & & & & \\ \hline & & & & \\ \hline & & & & \\ \hline & & & & \\ \hline & & & & \\ \hline \end{array} & \begin{array}{c} h_{D-1} \quad h_1 \\ \boxed{H_1} \end{array} \end{array} \cdot \begin{bmatrix} x_0(k-1) \\ x_1(k-1) \\ x_2(k-1) \\ x_3(k-1) \\ x_4(k-1) \end{bmatrix} + \begin{array}{c} \begin{array}{|c|c|c|c|c|} \hline h_0 & & & & \\ h_{D-1} & \boxed{H_0} & & & \\ & \boxed{H_1} & \boxed{H_0} & & \\ & \boxed{H_1} & \boxed{H_0} & \boxed{H_1} & \\ & \boxed{H_1} & \boxed{H_0} & \boxed{H_1} & \boxed{H_0} \\ & & \boxed{H_1} & \boxed{H_0} & \boxed{H_1} \\ & & & \boxed{H_1} & \boxed{H_0} \\ & & & & \boxed{H_1} \\ & & & & h_{D-1} \quad h_0 \\ \hline \end{array} & \begin{array}{c} h_0 \\ h_{D-1} \end{array} \end{array} \cdot \begin{bmatrix} x_0(k) \\ x_1(k) \\ x_2(k) \\ x_3(k) \\ x_4(k) \end{bmatrix} = \begin{array}{c} \begin{array}{|c|c|c|c|c|} \hline h_0 & & & & \\ h_{D-1} & \boxed{H_0} & & & \\ & \boxed{H_1} & \boxed{H_0} & & \\ & \boxed{H_1} & \boxed{H_0} & \boxed{H_1} & \\ & \boxed{H_1} & \boxed{H_0} & \boxed{H_1} & \boxed{H_0} \\ & & \boxed{H_1} & \boxed{H_0} & \boxed{H_1} \\ & & & \boxed{H_1} & \boxed{H_0} \\ & & & & \boxed{H_1} \\ & & & & h_{D-1} \quad h_0 \\ \hline \end{array} & \begin{array}{c} h_0 \\ h_{D-1} \end{array} \end{array} \cdot \begin{bmatrix} x_0(k) \\ x_1(k) \\ x_2(k) \\ x_3(k) \\ x_4(k) \end{bmatrix}$$

$\xleftarrow{\quad [H_{IBI}] \cdot x(k-1) \quad} \quad \xleftarrow{\quad [H_{ISV}] \cdot x(k) \quad}$

Figure 9

$$\begin{array}{c}
 h_0 \quad h_{D-1} \quad h_1 \\
 \begin{array}{|c|c|c|c|} \hline H_0 & & & H_1 \\ \hline H_1 & H_0 & & \\ \hline & H_1 & H_0 & \\ \hline & & H_1 & H_0 \\ \hline & & & H_1 & H_0 \\ \hline \end{array}
 \end{array}
 \cdot
 \begin{array}{|c|} \hline x_4(k) \\ \hline 0_D \\ \hline 0_D \\ \hline 0_D \\ \hline 0_D \\ \hline \end{array}
 =
 \begin{array}{|c|} \hline [H_0] \cdot x_4(k) \\ \hline [H_1] \cdot x_4(k) \\ \hline 0_D \\ \hline 0_D \\ \hline 0_D \\ \hline \end{array}$$

$h_{D-1} \quad h_0$

Figure 10

$$\begin{array}{c}
 h_{D-1} \quad h_1 \\
 \begin{array}{|c|c|c|c|} \hline & & & H_1 \\ \hline & & & \\ \hline & & & \\ \hline & & & \\ \hline & & & \\ \hline \end{array}
 \end{array}
 \cdot
 \begin{array}{|c|} \hline x_0(k-1) \\ \hline x_1(k-1) \\ \hline x_2(k-1) \\ \hline x_3(k-1) \\ \hline \alpha_k \cdot P_D \\ \hline \end{array}
 +
 \begin{array}{c}
 h_0 \quad h_{D-1} \\
 \begin{array}{|c|c|c|c|} \hline H_0 & & & \\ \hline H_1 & H_0 & & \\ \hline & H_1 & H_0 & \\ \hline & & H_1 & H_0 \\ \hline & & & H_1 & H_0 \\ \hline \end{array}
 \end{array}
 \cdot
 \begin{array}{|c|} \hline x_0(k) \\ \hline x_1(k) \\ \hline x_2(k) \\ \hline x_3(k) \\ \hline \alpha_{k+1} \cdot P_D \\ \hline \end{array}
 =
 \begin{array}{c}
 \frac{\alpha_k}{\alpha_{k+1}} \cdot h_{D-1} \quad \frac{\alpha_k}{\alpha_{k+1}} \cdot h_1 \\
 \begin{array}{|c|c|c|c|} \hline H_0 & & & \frac{\alpha_k}{\alpha_{k+1}} \cdot H_1 \\ \hline H_1 & H_0 & & \\ \hline & H_1 & H_0 & \\ \hline & & H_1 & H_0 \\ \hline & & & H_1 & H_0 \\ \hline \end{array}
 \end{array}
 \cdot
 \begin{array}{|c|} \hline x_0(k) \\ \hline x_1(k) \\ \hline x_2(k) \\ \hline x_3(k) \\ \hline \alpha_{k+1} \cdot P_D \\ \hline \end{array}$$

$\xleftarrow{[H_{IB}] \cdot x(k-1)} \quad \xleftarrow{[H_{IS}] \cdot x(k)}$

Figure 11

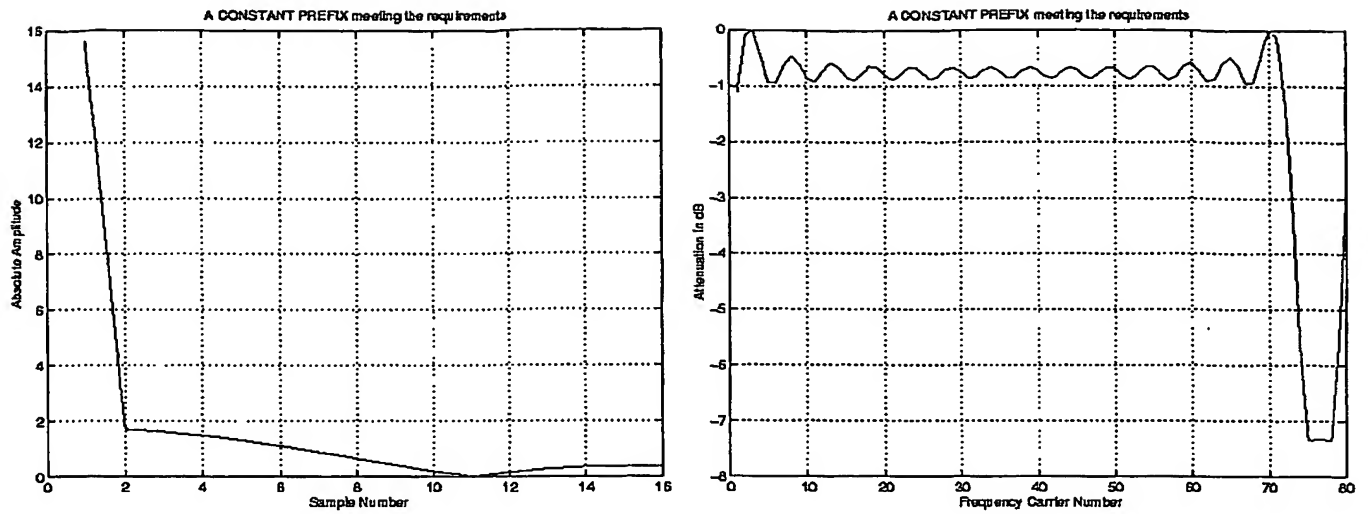


Figure 12